APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,308	12/02/2003	Shu Ling	OR03-08001	5159

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ORACLE INTERNATIONAL CORPORATION
c/o A. RICHARD PARK
2820 FIFTH STREET
DAVIS, CA 95616-2914

EXAMINER
DOAN, DUC T

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 11/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>08 March 2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-29</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-29</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-29 are in the application.

Claims 1-29 are rejected.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in

section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the

manner in which the invention was made.

Claims 1-9,11-29 rejected under 35 U.S.C. 103(a) as being unpatentable over Datta (US

Pub 2003/0004998 and in view of Cuomo et al (US Pub 2004/0148474).

As for claim 1, Datta describes a computer-implemented method of piggybacking a

message invalidating cached data on a response to a data request, the method comprising: in a

hierarchy of caches, passing a data request toward a data server; at an upstream cache (Datta's

Fig 1: data request from user to application server cluster #112), detecting the invalidation of a

set of data cached on one or more downstream caches, including a first downstream cache

(Datta's page 10, paragraph 118 lines 1-5, determining if the cacheable content is stored in the

dynamic proxy cache and is valid) ; in a response to the data request (Datta's Fig 4, 10 page 13

paragraphs 144,145, as needed a get command or a set command and data are sent to the proxy

cache) , including a message to the first downstream cache to invalidate the set of data; and

forwarding the response toward the first downstream cache (Fig 4: #430 describes in the cache

content is invalid, the get command will not be attached in the message to the proxy cache; Fig

10, page 13 paragraph 148 further describes in a forward proxy configuration, all bits for the

fragment's key also can be cleared when the particular segment becomes invalid; Datta's page 12

paragraph 137 describes backend server maintains a free list of cacheable segments). Datta does

not describe the hierarchy aspect of the claim. However, Cuomo describes a hierarchy of caches

(Cuomo's Fig 2: #28,30,32,34,36) wherein each cache along the chain builds upon the contents

of its predecessors. It would have been obvious to one of ordinary skill in the art at the time of

invention to include hierarchical cache methods and structures as suggested by Cuomo in Datta's

system to allow each cache along the chain builds upon the contents of its predecessors. Utilizing

caches in this manner, thereby reduces the consumption of resources required by user's requests

(Cuomo's page 3 paragraph 27).

As for claims 2-3, the claims recite adding the set of data to a list of data to be invalidated

on downstream caches (claim 2); removing the set of data from the list of data after data request

responses including messages to invalidate the set of data have been forwarded to each of the one

or more downstream caches (claim 3). Datta's page 3 paragraph 26 describes the backend

monitor can track content fragments stored in the dynamic proxy cache. The back end server

further maintains a cache directory with listing of keys referencing fragments stored in the dynamic proxy cache.

As for claim 4-5, the claims recite wherein the set of data includes data requested in the data request (claim 4); wherein the set of data includes no data requested in the data request (claim 5). Datta's page 13 paragraphs 144,148,150 describes the backend monitor can determine whether the bit corresponding to the particular dynamic proxy cache is set in the key. Datta's page 8 paragraph 95 further describes the backend monitor can generate "hole" placeholder to indicate where the cache to be inserted to dynamic proxy cache.

As for claim 6, the claim recites in the first downstream cache: receiving the response; retrieving the message; invalidating the set of data if the set of data is cached on the first downstream cache; and forwarding the response toward a second downstream cache. Datta's page 13 paragraph 144 describes a fragment can be stored at multiples proxy caches. Datta's page 7 paragraph 94, lines describe a forward proxy configuration in which proxy caches resides at the network edges and include multiple proxy caches. Thus Datta clearly suggests in the situation that the requested data is not provided by the first proxy cache; the request will be forwarding to the second proxy cache, and the entry in the first cache will be invalidated since this entry does not contain the valid data.

As for claim 7, the claim recites in the first downstream cache: receiving the response; removing the message from the response; invalidating the set of data if the set of data is cached on the first downstream cache; and serving the response to a client that initiated the data request. The claim rejected based on the same rationale as in the rejection of claim 6. Datta's page 13,14 paragraph 143,146 describe the backend monitor can select which proxy cache to store a new

fragment. In the situation that the second downstream cache is selected for the new fragment, the first down stream cache location for the old "stale" segment must be invalidated. The first downstream must also forward the new fragment value to the second downstream cache.

As for claim 8-9, the claims recite wherein said detecting comprises: receiving an invalidation message originated by the data server (claim 8; page 13 paragraph 144); wherein said detecting comprises: receiving a manual notification of the invalidation of the set of data (claim 9). Datta's page 9 paragraph 104 describes of using a tag to indicate the fragment to be cached or not to be cached. Datta further describes an API to provide an easy user application interface to dynamically enable or disable caching the fragments by scripts.

As for claim 11, Datta describes wherein the upstream cache is a cache local to the data server (Datta's Fig 3C: #112 application server's cache).

As for claim 12, Datta describes wherein the upstream cache and the first downstream cache are members of a cache cluster (Datta's page 12 paragraph 142 describes a fragment can be resided in a group of dynamic proxy caches and the backend monitor provides a key to group and keep track of fragments in various caches).

Claim 13 rejected based on the same rationale as in the rejection of claim 1.

As for claim 14, the claim recites an automated method of asynchronously communicating a side effect of a first data request in a response to a second data request, the method comprising: in a computing environment comprising a data server and a plurality of caches, processing a first data request to produce a first response; identifying a side effect of the first data request; communicating the side effect to a first cache upstream of one or more downstream caches; at the first cache: identifying a second response to a second data request;

including notification of the side effect in the second response; and forwarding the second

response toward a first downstream cache; and at the first downstream cache, applying the side

effect. The claim rejected based on the same rationale as in the rejection of claim 1. Datta's

further describes the tag (Datta's page 9 paragraphs 104-108, corresponding to the claim's side

effect) in multiple fragments from the backend monitor forwarding to the proxy caches such that

the proxy caches using the tag's information can easily reassemble fragments and execute the

functions indicating by the tags (Datta's Fig 13,14). As for the claim's aspect of the side effect in

the second response, Datta's page 13 paragraph 148 describes a bit vector corresponding to

multiple fragments, the vector is sent in each previous and current requests. Thus the bit vector

reflects value up to the current state.

As for claims 15, Datta's page 13 paragraph 144 describes wherein the side effect

comprises invalidation of data cached on the first downstream cache.

As for claim 16, the claim recites wherein the side effect comprises propagation of cache

configuration data. Datta's page 8 paragraph 95 describes the backend monitor can forward hole

(placeholder) location information to the proxy cache. Thus the proxy cache is configured by the

backend monitor.

As for claim 17 the claim recites wherein the side effect comprises a password. It has

been know the art that the script can comprise of routine to verify certain user information such

as password.

As for claims 18-19, the claims recite wherein the side effect comprises an update to a

cache program (claim 18); wherein the side effect comprises a replacement cache program

(claim 19). Dattra's page 2 paragraph 12, page 11 paragraph 125 describe the content can be a

HTML or scripting programs. Datta's page 9 paragraph 104 describes a content such as banner is replaced each time. Datta's page 13 paragraph 147 describes content can be updated.

As for claims 20-21, the claims recite wherein said applying the side effect at the first downstream cache comprises applying the side effect after forwarding the second response (claim 20); wherein said applying the side effect at the first downstream cache comprises applying the side effect before a specified event (claim 21).

As for claim 22, the claim recites at the first cache, tracking which of the one or more downstream caches has been notified of the side effect; wherein a downstream cache other than the first downstream cache receives notification of the side effect in a communication other than the second response. Datta's page 13 paragraph 148 when the request is forwarded, each proxy use the key value determine if the requested data is valid in its own cache. Datta's page 12 paragraph 143 further describes the key is mapped uniquely and dynamically to the proxy caches IP addresses.

Claim 23 rejected based on the same rationale as in the rejection of claim 14.

As for claim 24, the claim recites a system for piggybacking notification of a side effect of a first data request in a response to a second data request, comprising: a data server configured to serve data in response to data requests; one or more downstream caches configured to cache the served data; and an upstream cache logically located between the data server and the one or more downstream caches, wherein the upstream cache is configured to include, in a response to one data request, notification of a first side effect of a different data request. The claim rejected based on the same rationale as in the rejection of claim 14.

As for claims 25-27, Datta describes wherein the upstream cache comprises: a subscription table identifying each of the one or more downstream caches; and a list of side effects that the one or more downstream caches are to be notified of (claim 25); wherein the upstream cache is further configured to remove the first side effect from the list of side effects after each of the one or more downstream caches have been notified of the first side effect (claim 26); wherein the first side effect comprises the invalidation of a set of data (claim 27) (Datta's page 12 paragraph 138).

As for claim 28, the one or more downstream caches include a final downstream cache coupled to a client that initiated the one data request; and the final downstream cache is configured to remove the notification of the first side effect of the different data request from the response before serving the response to the client. The claim rejected based on the same rationale as in the rejection of claim 6. Datta's page 8 paragraph 95 further suggesting in a forwarding cache configuration, the proxy cache will retrieve the content and deliver to user.

Claim 29 rejected based on the same rationale as in the rejection of claim 11.

Claim 10 rejected under 35 U.S.C. 103(a) as being unpatentable over Datta (US Pub 2003/0004998, Cuomo et al (US Pub 2004/0148474) as applied to claim 1, and further in view of Ims et al (US Pub 2004/0049579).

As for claim 10, the claim recites wherein the data request is initiated by a first requestor and the response is targeted to a different requestor. Datta does not describe the claim's detail of the response. However, Ims describes a load balancer that is capable of routing incoming request to the caching proxies (Ims's page 8 paragraph 96) using the HTTP response message protocol in

which the response serves a "client redirect" message to the requesting client (Ims's page 8

paragraph 103). It would have been obvious to one of ordinary skill in the art at the time of

invention to include client redirect methods and structures as suggested by Ims in Datta's system

to allow notifying the client to redirect the request to original site for the requested file, thus the

incoming requests are redistributed to the correct content servers and thereby further optimizing

the requests over the effective bandwidth of the overall system (Ims's page 8 paragraph 96 lines

1-5).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's

disclosure.

Jacobs et al (US 6799251).

Doyle et al (US 2003/0046357).

Agrawal et al (US 2002/004813).

When responding to the office action, Applicant is advised to provide the examiner with

the line numbers and page numbers in the application and/or references cited to assist examiner

to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The

examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Kevin L. Ellis
Primary Examiner